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THE MEDICAL NEEDS OF THE PEOPLE AND THE PRESENT SYSTEM OF MEETING THEM.*

BY

J. A. MITCHELL, M.B., CH.B.GLAS.,

SECRETARY FOR PUBLIC HEALTH AND CHIEF HEALTH OFFICER, UNION OF SOUTH AFRICA.

SOME two years ago Dr. Olin West, secretary of the American Medical Association and one of the leaders of medical opinion in the United States, expressed in the following statement a view widely held in that country:

"The one great outstanding problem before the medical profession to-day is that involved in the delivery of adequate, scientific medical service to all the people, rich and poor, at a cost which can be reasonably met by them in their respective stations in life."

In a brochure published in connexion with the matter it is stated that in the United States

"there is much complaint among the people because of the high cost of medical care; there is also much discontent amongst physicians and other personnel because of insufficient income; doctors, dentists, nurses, and others engaged in the cure and prevention of disease are certainly not getting rich at the expense of the sick; it is the large number of separate charges in many cases which causes hardship; the question arises whether the present system meets adequately the needs either of the patient or of those who render him professional service."

Appointment in U.S.A. of Committee on Cost of Medical Care.

Following on considerable public discussion of the matter and the lead of the medical profession—and with financial support from the Carnegie Corporation, the Millbank Memorial, and other organizations—a representative "Committee on the Cost of Medical Care" of forty-two members, drawn from all parts of the States, including twenty-three doctors of medicine, five eminent economists, nine representatives of the general public, a State commissioner of health, and a public health nurse, was constituted in February, 1928. A five-year programme of inquiry and research has been mapped out, and the investigations are now actively going on.

Position in South Africa.

Here in South Africa we have the same problem, differing merely in detail. To-day in the Union, broadly speaking, "adequate scientific medical service" is reasonably available only to the rich and to the poor; to the large intervening section, and more especially to residents in outlying rural areas, it is only available at, to them, excessive or even ruinous cost, or out of reach altogether. As the secretary of a farmers' association in a remote part of the Northern Transvaal recently put it to me, it was much cheaper for people in his part of the country to have funerals than doctors!

If a settler's horse or cow gets sick and there is a Government veterinary officer in the district (there are about sixty such officers at present), he can obtain the latter's services on payment of bare transport costs—2s. a mile to the farm (or 1s. a mile for the journey there and back), with a maximum of £3 and a minimum of 5s. for the visit*; but if it is himself, or his wife or child, who is ill, not being a pauper, he is not entitled to a free medical relief order for a visit by the district surgeon, so he has the alternatives of either doing without or getting a medical practitioner to visit at private patient rates—which in his circumstances, and especially if repeated visits are necessary, may be quite beyond his means. The motor car and the telephone have made medical aid more easily and quickly available in the "platteland," but they have not reduced its cost to the public. Even to a large section of town-dwellers—in the artisan and wage-earning classes, clerks, small shopkeepers, and so forth—the cost of adequate medical services is often crushingly heavy or even prohibitive, and is apt to come at a time when the person responsible is least able to pay.

Here, as in the United States, it is often the multiplicity of charges which so greatly increases the burden. There is no system of combination, with inclusive charges, among the members of the profession, and no provision for "team work." The patient, when he first embarks on a course of treatment, does not know, and cannot ascertain, what the total cost is going to be; he gets carried along from one to another in the hope of cure, and finishes up with a total bill of costs which it may be very difficult or impossible for him to pay.

Results of the Present System.

The results of the present system in the Union are an enormous sale of patent and Dutch medicines, and a great vogue of quacks of various kinds; also that a large percentage of the sick receive very inadequate medical treatment or no medical treatment whatever, and that many cases of serious diseases—cancer, for instance—go from onset to fatal termination without once being seen by a medical man. About 10 per cent. of the total deaths of Europeans in the Union from all causes are not medically certified, which means that the victims have not been seen even once by a doctor. Concurrently with all this, whilst a few specialists and practitioners, owing to exceptional ability or fortunate circumstances, are making good incomes, and a further number are able to live comfortably on their earnings, the great majority find it difficult to make ends meet, and, as in the United States, "are certainly not getting rich at the expense of the sick."

Insufficient Attention Paid to Prevention.

Another great defect of the present system of medical services is the scant attention paid to the prevention of disease and the maintenance of health, either in the individual or in the community. It is true that the curriculum of medical training includes a short course of lectures on public health, but instruction in the feeding and care of

* Read at the South African Medical Congress, Port Elizabeth, March 15th, 1929.

* Agricultural Department Notice No. 2055 of December 20th, 1921.

infants and children and of nursing mothers, dietetics, exercise, and the general principles of healthy living is, as a rule, inadequate and perfunctory, instead of being an essential and integral part of the whole course of training in medicine, surgery, and midwifery. Of a total of about 1,900 medical men in the Union, only about 50 are engaged solely or primarily in preventive work. The general practitioner—the man who comes into close contact with the sick, with their families, and with the public in their own homes—whose influence with and knowledge of the people, properly used, would yield most valuable results, has no special or pecuniary interest in the preventive side of medicine, and often regrettably little knowledge of it. In an address on "The public ill health" at the congress in Johannesburg in 1922, I expressed the view that some radical modification of the present system is necessary before we can make any further general advance in public health, and urged that preventive and curative medicine should be closely linked up, and that some means should be devised of giving the private practitioner a live, real, and financial interest in prevention. At present the only tangible encouragement of this kind which he receives is a half-crown fee for notifying cases of infectious disease.

Experiment in Cattaraugus County, New York State.

During the past few years a very instructive experiment in disease prevention on a large scale has been going on in Cattaraugus County, New York State, comprising several towns and villages and a large rural area. The scheme was planned by a representative committee, which included several experienced medical men and health officers, and was financed mainly by the Millbank Foundation. It was launched in 1924, and a five-year programme set out. It provided for health educative and propaganda work on a comprehensive scale; active preventive measures against tuberculosis, enteric, diphtheria, and other preventable diseases; instruction in dietetics; provision for maternity and child welfare work; and, indeed, covered the whole preventive field very thoroughly. Health officers, lecturers, health visitors, nurses, and inspectors were appointed—all devoting their time and energies to removing the causes of and preventing disease.

The results have, on the whole, been very gratifying, and in some directions striking. But the remarkable feature of the whole scheme was that the general practitioners in the area were left entirely out of the picture; apparently they were not consulted, nor were their co-operation and assistance sought in any way. Thus it came about that in several important respects the scheme did not come up to expectation. Recently the local medical societies were asked whether they were in favour of its continuance for another five years, but after a very illuminative discussion the majority voted against this.

A study of the history and course of this experiment leaves a strong impression that, had the general practitioners practising in the area been consulted and taken into the scheme at the outset, and given a definite role and substantial financial interest in carrying it through to success, the results would have been far better than those actually achieved, and would probably have led to the establishment of a permanent system. The story of this experiment carries a very important lesson for us in South Africa, and, indeed, for all countries faced with this problem.

Need for Revision of Present System.

The revision or alteration of the present system is primarily a matter for the Government and the people themselves, but it is the clear duty of the medical profession to study the subject, to co-operate, and, if possible, to make helpful and constructive suggestions and give a lead. Unless the present individualistic, competitive, and purely curative system of medical services can be modified or adapted to meet modern needs and conditions it will assuredly "go under" and be replaced by some system which will meet those needs. There are already portents in the medical sky—in England and the United States the "pay dispensary" or "pay clinic," and here in South Africa the vogue of physical culturists, nature healers, and so forth.

The need is for a system which will not only bring efficient curative medicine within the reach of the sick of all classes, but one under which every medical practitioner will devote special attention to the prevention of disease and the maintenance of health—in the individual and family and in the community as a whole.

State Medical Service.

An obvious plan of reorganization is the nationalization of medical aid for the whole community—the provision by the State of free medical care and treatment for all citizens, or for all who wish to avail themselves of the State service. Under this plan all overlapping could be avoided, the service could be organized and co-ordinated on team lines, and due attention to prevention of disease and the promotion of health could be ensured. It may further be contended that the cost to the State need not be more than it is at present, in the aggregate, to the community and its members.

There are, however, serious drawbacks to any such plan: the elimination of salutary competition and rivalry; the loss or restriction of choice of medical attendant by patients; the "dead hand" of State control, and the shackling effects of bureaucratic administration and "red tape"; the risks of imposition and exploitation; and the difficulty of preventing rapid increase of expenditure.

Although schemes of this kind have been repeatedly and strongly advocated by enthusiasts, no Government has so far embarked on a policy of providing free medical services for all.

State-aided Medical Service and National Health Insurance.

In most countries to-day the policy is to endeavour to meet the medical needs of the people by developing a system of free medical services for the indigent, and of *aided* medical services for those who are only able to contribute—the latter being usually provided under some scheme of national health insurance. The essential feature of most such schemes is that the insured are either encouraged or required by law to make regular and systematic contributions out of their wages or earnings; employers are also required to contribute, and a contribution is made by the State out of revenue derived from general taxation. Out of the fund so formed are paid the fees and allowances of medical practitioners and others employed in rendering services to the insured, these being usually fixed and agreed upon between the Government and the medical profession by a process of collective bargaining. In a few countries only a cash benefit is payable during illness, the recipients being left to make their own arrangements as regards medical treatment.

Advantages and Drawbacks of Health Insurance Schemes.

The potentialities and advantages of such a scheme are obvious, especially where its scope includes the wives and families of insured persons, and the benefits comprise specialists and hospital services. Its great drawback is that, whilst it facilitates and provides for treatment, prevention—both in the insured and in the community—is apt to be neglected; it may even tend to increase the amount of incapacitation and illness, or, at least, the "lay-off" from work due to sickness. It does not make provision for promoting and encouraging cleanliness and healthy living, the removal of the root causes of sickness and disease, and the building up of a fit and virile community. Under the English scheme something is done in this direction by paying the medical attendant at a fixed rate per insured person per annum, irrespective of his health or illness—so that the healthier the insured community the less work the medical officer will have, and it is therefore his interest to prevent disease in the insured. This arrangement has undoubtedly a salutary tendency, but under the English scheme it is only the wage-earner who is insured, not his family, and the panel doctor is not linked up with the local health authority, on whose action—or want of action—the absence or prevalence of preventable sickness may largely depend. There is a further provision in the English Act under which a negligent local health authority may be called upon to pay the excess cost to the Insurance Fund entailed by its neglect, but the difficulties of assessing such excess and enforcing this pro-

vision are very great, and so far it has been a dead letter. The problem of combining under a national health insurance scheme treatment provision with adequate and effective preventive provision has not yet been solved. The term itself is a misnomer—it is not health, but merely medical attendance, which is "insured."

A further difficulty is that of securing payment of contributions from persons not receiving wages or salary; here there is no employer who can be made responsible for making the requisite deductions and paying these over (with his own contributions as employer) to the insurance fund.

The essence of national health insurance is State assistance, out of revenue derived from general taxation, in meeting the medical needs of the poorer sections of the community. Where the circumstances render the ordinary ways of rendering such assistance unsuitable or impracticable, other ways may reasonably be devised. In Great Britain—in the Highlands and Islands of the North—a special system of subsidized or State-aided medical practice has been developed under the Insurance Act.

Recent Developments in the Union.

In the Union we already have such a system in embryo. Under the general laws dealing with poor relief provision exists for free medical attendance through the district surgeons' service on paupers and indigents—a system which has been in operation for many years past. There was, however, no provision for helping struggling settlers, small farmers, and others in poor circumstances living in remote and often malarial localities, until 1927, when by a clause in a Public Health Amendment Act the Minister was empowered—out of funds to be specially voted by Parliament for the purpose—to arrange for periodical visits or tours by district surgeons to out-stations at Government expense, on the understanding that during these tours or visits, in addition to treating paupers and any other Government patients, district surgeons would treat private patients at headquarter rates, and where extra travelling was entailed for domiciliary visits, that only the extra travelling would be charged to the private patient. This system is working in several districts, and has proved useful up to a point, but in several places the people have represented that these periodical visits are of little use, that illnesses cannot be timed to coincide with them, and that what is wanted is a medical man permanently resident in the area. This would often be prohibitively costly, as the private practice income would be very small, and the members of such a community can rarely be got to put up a guarantee or enter into any joint arrangement. During the past year, however, additional district surgeons have been appointed in ten such areas at a small but inclusive annual salary or subsidy, the main object being to help the residents to retain a medical man in the locality. What is really needed in many districts is a service of district nurses and health visitors to work in conjunction and under the general direction of the district surgeon; this, however, is a matter for the provincial administrations and local health authorities, and there is little prospect of anything being done.

Commission on National Health Insurance.

Three years ago a Commission was appointed by Government to inquire into and report on old age pensions and national insurance. Its report on the latter has not yet been published, but rumour hath it that it will recommend a compulsory and contributory system of national insurance for workers in the towns, and, for the country districts, development of the methods of State medical aid already in operation. The Commission consulted the profession and obtained the general and tentative views of the Medical Association of South Africa thereon, but did not include a medical man among its members. The whole matter will call for further consideration immediately the report of the Commission is published. The questions involved are fraught with grave and far-reaching issues, both for the country and for the medical profession.

I hope that this paper may prove useful in calling attention to the vital importance of the matter, and that it will evoke some interest and discussion, and so promote the shaping of a policy and system which will meet the needs of South Africa.

British Medical Association.

SCIENCE COMMITTEE.

SCHOLARSHIPS AND GRANTS FOR 1928-29.

AT its last meeting the Science Committee had before it reports of its visitors on the work done by the scholars and grantees for 1928-29, together with statements by the scholars themselves.

SCHOLARSHIPS.

Dr. J. CLIFFORD HOYLE, Ernest Hart Scholar, who has been engaged in whole-time research in the Pharmacological Laboratory, Cambridge, reported the results of his investigations of the following three problems: (1) the therapeutic value of calcium in the treatment of experimental tuberculosis; (2) the value of gold compounds in the treatment of tuberculosis; (3) the effects of administering large doses of ergosterol irradiated in (*a*) oily, (*b*) alcoholic solution. The scholar submitted the following summary of his work:

During the past year I have carried out a series of experiments on rabbits inoculated into the peritoneal cavity with a virulent bovine strain of tubercle bacillus. Fourteen animals were used in all. Eight of these were kept as controls, and the remaining six were given intravenous injections of a calcium chloride solution daily; the dose given was 5 to 10 mg. of calcium per kilogram of body weight. The injections were maintained throughout the course of the disease, but in no case were beneficial effects observed. The average length of survival after inoculation in the control and experimental rabbits was the same, and post mortem no differences were found in either the extent or character of the disease in the two groups. This work, therefore, entirely fails to support the contention that calcium treatment exerts a beneficial therapeutic action on the course of tuberculous infections.

I have been able during the past year to investigate the therapeutic action in experimental tuberculosis of certain new gold derivatives prepared by Professor G. T. Morgan, F.R.S., and Professor Sir William Pope, F.R.S. The first compound was a complex aurous salt of ethylenethiocarbamide. This substance is stable, crystalline, and colourless at ordinary temperatures, and is readily soluble in distilled water, making a neutral solution. I investigated its effect in both human and bovine types of infection. In guinea-pigs, with a human infection, no benefit was found. In rabbits, however, in which inoculation was made into the abdominal wall with a virulent bovine strain, the average length of life was prolonged about 50 per cent. Although these results do not afford any substantial evidence that the treatment used had beneficial effects of sufficient importance to warrant more extensive investigations with this and allied compounds, they are helpful in pointing out the direction in which further investigations of gold compounds as therapeutic agents in this disease should be made. The second compound which was investigated is a complex gold succinimide which is non-ionized in aqueous solution. With this substance completely negative results were obtained. I am investigating also some features of the pulmonary circulation which arose incidentally in my work. Two papers on the subject have already been published in the *Journal of Physiology* (1928, 65, 299, and 1929, 67, 77).

During the last year I have devoted much time to investigating the effects of large doses of irradiated ergosterol. I found that no toxic or detrimental effects were produced in rats with doses of 1 to 2 mg. daily. With larger amounts—11 to 17 mg. daily—the animals failed to grow at their normal rate, and post-mortem examination showed calcium phosphate calculi to be present in the urinary tract. The calculi varied in number, size, and position, and in some cases had produced marked secondary mechanical changes. Other observers have described acute toxic manifestations and the production of severe arteriosclerosis and widespread calcium deposits in the tissues with similar doses of irradiated ergosterol. In certain cases these results have been produced with ergosterol which has been irradiated in alcoholic solution. The ergosterol which I used was irradiated in oily solution, as occurs naturally in the skin, and I suggested that some independent toxic factor, produced by irradiation in alcoholic solution, was responsible for the poisonous effects described by other workers. In further work I have been able to confirm my earlier findings. These experiments were made to determine the immediate cause of the formation of the urinary calculi. Unfortunately, I was unable to determine the urinary calcium excretion on account of technical difficulties in estimating calcium in rats' urine, but I found that during the administration of large doses of irradiated ergosterol such animals developed a striking

diuresis without any significant increase in the total excretion of phosphate. I found, further, that there was no change in the urinary *p*H or in the total chloride excretion during this period. The explanation of the formation of the calculi is at present, therefore, *sub judice*, but it is probable that a marked increase in the urinary calcium excretion is the determining factor.

Further experiments are now in hand to compare the effects of large doses of ergosterol that has been irradiated in oily solution with those of ergosterol irradiated in alcoholic solution.

The Committee recorded its satisfaction with his report, and reappointed Dr. Hoyle as Ernest Hart Scholar for a further year.

Dr. ALBERT A. PEEL (Glasgow) has been conducting an investigation of micro-organisms intermediate between the simple bacilli and the lower fungi.

1. Filamentous organisms hitherto described in the cerebro-spinal fluid fall into one of three groups: (1) filamentous variants of members of the "coli-typhoid" bacilli; (2) filamentous variants of a bacillus resembling Pfeiffer's bacillus; (3) streptothrices, including *Cladothrix asteroides*.

2. True leptothrices as exemplified by various strains have not hitherto been described in the cerebro-spinal fluid (apart from references to cases in the present series). Of the true leptothrices, sporing and non-sporing strains have been recognized.

3. An organism resembling in its morphology the true leptothrices is described. It is a spore-former, and was cultivated from the cerebro-spinal fluid of three cases; the same organism was obtained as a permanent variant from five strains of a non-sporing filamentous organism belonging to group (2) of the above classification. It has been named *Leptothrix febrilis*.

4. Seven strains of a non-sporing filamentous organism belonging to group (2) of the above classification are described. From five of them a sporing variant, already referred to as *Leptothrix febrilis*, was obtained. The relation of the former to the latter is discussed.

5. The clinical manifestations of the eleven cases yielding the organisms referred to under paragraphs 3 and 4 are similar, and constitute a clinical entity distinct from the generally recognized infections. They have been described by Ivy McKenzie (Leptothricosis, *Glasgow Medical Journal*), and have been discussed in a separate paper, accepted by the *Journal of Hygiene* about a year ago, but not yet published.

6. Spore formation in the sporing strains of the leptothrix described as dependent on certain physico-chemical conditions, which are detailed; and cultures can be made to spore or kept spore-free at will by varying these conditions. Similar considerations influence the motility of the organism. It is therefore suggested that spore formation alone is not a reliable basis for the classification of the leptothrix group.

7. A new classification for the filamentous organisms which may occur in cerebro-spinal fluid (or elsewhere) is suggested—namely:—I. Filamentous variants of bacilli, or pseudo-leptothricaceae: (*a*) variants of members of the "coli-typhoid" group; (*b*) variants of a bacillus resembling Pfeiffer's bacillus. II. True leptothricaceae; possibly divisible into sporing and non-sporing varieties. III. Streptothricaceae. There may possibly exist a group intermediate between these and the corynebacteria, analogous to Group I.

8. It is difficult or impossible to draw a sharp dividing line between the different groups. Mellon has shown that the members of Group I may be derived from simple bacilli as more or less permanent variants; while the examples adduced illustrate the reversion of such a variant to its original type after a more or less prolonged existence in the variant phase. Again, the organism of Group II described was obtained on five occasions as a permanent variant of members of Group I (*b*); such a variation is no more difficult of conception than the former. Finally, the history of the controversy regarding the classification of the organism described by Eppinger as *Cladothrix asteroides* illustrates the difficulty of drawing a sharp dividing line between Groups II and III.

The Committee felt that this work, which was of an extremely technical nature, would help to clear up some points in a difficult department of bacteriology.

Dr. DUGALD BAIRD (Glasgow) has been conducting a study of urinary infections in pregnancy and the puerperium. Dr. G. A. Allan, the Science Committee's visitor, reported that he was much impressed with the investigations, and the Committee reappointed Dr. Baird for a further year. The following report was submitted:

This investigation of urinary infections during pregnancy and the puerperium was carried out in the Glasgow Royal Maternity and Women's Hospital and involved a study of 71 patients with pyelitis of pregnancy. Of these patients, 22 were primiparae, 49 multiparae. The disease in primiparae was severe (13, or 72 per cent., resulting in premature termination of the pregnancy); the onset was sudden and the clinical picture suggestive of a blood-borne infection. In multiparae the disease was not so severe (only 7, or 16 per cent., ending in premature termination of the pregnancy); it had a more gradual onset and was preceded by a history of cystitis. Focal sepsis, constipation, and ill health were not found to be predisposing factors, and many of the most severe cases occurred in young, healthy primiparae. In many cases the toxic symptoms overshadowed the kidney symptoms, leading to mistakes in diagnosis; thus cases were admitted as hyperemesis, albuminuria, debility, and so forth. As far as can be ascertained from the small number of patients followed through more than one pregnancy, pyelitis does tend to recur, but usually in a less severe form. In all but 4 cases the organism was a coliform bacillus, and belonged to one of the common types; the type of coliform bacillus had no relation to the type of attack. As a general rule only one type of organism could be isolated from each urine; in many cases the same organism could be cultured from the faeces, but it was not found to be the predominating one.

An attempt is being made to determine the incidence of infection of the urinary tract in pregnancy and to observe what changes take place in the urine as pregnancy advances. These studies should throw some light on the relation between the occurrence of bacilluria and the development of pyelitis. So far 33 per cent. of the patients have shown some evidence of urinary infection on first examination.

The question of latent urinary sepsis during pregnancy has been investigated by the examination of urines of all patients admitted to the ante-natal wards of the hospital. Of 200 consecutive patients, 70, or 35 per cent., had evidence of urinary infection; 20 of these were suffering from pyelitis and 8 from cystitis. The remaining 42 had no urinary symptoms of any kind. In some of these patients it was obvious that the urinary infection had no part in the obstetrical complication for which they were admitted. In others it was doubtful what part the urinary infection played. Twenty-three cases, or 11 per cent., had symptoms of urinary infection, although examination of the urine gave negative results.

A study has been made of 13 cases of urinary infection in the puerperium. An interesting feature of these cases is that the symptoms may be slight, and in some cases entirely absent, in spite of a gross urinary infection with high temperature. Of the 13 patients concerned, 10 were primiparae, and of these 7 had had spontaneous deliveries. The urinary infection tends to clear up more quickly in these patients than in those with pyelitis of pregnancy.

All cases of urinary infection are being observed at a return clinic to note the after-effects of the infection on the urinary tract. In some cases a slight degree of hydronephrosis and hydro-ureter has been demonstrated; otherwise no gross deformities have been discovered. The numbers studied are as yet too small to supply information about the relation, if any, between the degree of resultant deformity and the severity or length of the attack.

The cause of dilatation of the ureters during pregnancy has never been adequately explained, but in ureters of women dying during pregnancy or the puerperium a hypertrophy of the juxtavesical portion as described by Hofbauer seems to exist. Attempts are being made to determine when this hypertrophy begins and what damage results if it does not involute completely after pregnancy. Of the 16 cases studied, 9 show dilatation, in most cases of both ureters, but more marked on the right side. This dilatation does not begin at the pelvic brim, but extends right down almost to the bladder—a fact which completely disposes of the theory that mechanical obstruction of the ureter by pressure of the uterus at the pelvic brim is responsible for the condition, and supports Hofbauer's view that the cause lies in a stenosis of the juxtavesical portion of the ureter brought about by hyperplasia of the wall and sheath.

Dr. N. L. LLOYD has been conducting investigations, in the Venereal Diseases Department of Guy's Hospital, into the excretion of novarsenobillon in syphilis and its relation to toxic effects. The following summary of the scholar's work was placed before the Committee:

1. Abelin and others have shown that the presence of salvarsan and allied bodies excreted in the urine may be demonstrated by a simple colour reaction. This is confirmed with regard to certain salvarsan derivatives, but not with regard to all.

2. Abelin's reaction has been utilized to determine the rate and duration of excretion of certain of these substances in the urine; 1,287 examinations of the urine of 103 patients have been made following 304 injections. The test is simple enough for routine use in a clinic, is applicable to out-patients, and does not take up the patients' time.

3. Great variations in the rate and duration of elimination may occur in the same patient with consecutive injections of equal dosage.

4. The results show a relation between indifferent excretion and toxic manifestations. In some cases inefficient elimination has been noted very early in the series of injections, and long before toxic manifestations occurred.

5. Of those patients who excreted well on every occasion when tested, only one showed toxic manifestations.

6. Of those patients who excreted poorly on one or more occasions, 35 per cent. suffered from toxic manifestations of major or minor degree.

7. This investigation suggests that inefficient elimination of salvarsan derivatives as shown by Abelin's reaction may indicate those patients who are liable to toxic manifestations with further treatment long before they may be differentiated by any other recognized test.

Dr. J. M. YOFFEY, demonstrator in the Department of Anatomy, University of Manchester, was appointed to continue his investigation of mammalian lymphoid tissue. He reported as follows:

The present work was suggested by the results of an investigation which has been previously conducted into the histology and physiology of the spleen in fishes.[1] It was found that in fishes the various formed elements of the blood developed from one common ancestral cell which resembled very closely the small round cell or lymphocyte of higher vertebrates. It was decided, therefore, to make a detailed examination of mammalian lymphoid tissue in order to ascertain whether the same method of blood formation prevailed in mammals also, and, if not, in what direction it had been modified.

In the dogfish, which affords a typical example of haemopoiesis in fishes, the development of the lymphocyte into the mature blood cell occurs in two stages. In the spleen the lymphocyte, by the acquisition of a thin coating of specialized cytoplasm, develops into a young granulocyte or erythrocyte. This is then swept into the blood stream, where it undergoes the final stage of its development. In mammals the final stages in the maturation of the blood cells occur under normal conditions in the bone marrow, and in the various collections of lymphoid tissue there is usually no obvious formation of either erythrocytes or granulocytes. Certain observers[2 3 4] have described the occurrence of such formation, but their work has never been fully recognized or its significance appreciated. It is clear that if lymphoid tissue possesses the same haemopoietic function in mammals as in fishes, one must assume either that the few lymphocytes in the bone marrow are the source of all the cells of the blood, or that an additional stage or stages are introduced into the haemopoietic cycle. Lymphocytes would first be formed in the scattered nodules of lymphoid tissue, and would undergo there the early part of their development. Secondly, they pass into the blood stream, where they may undergo a further portion of their development or may simply be in transit for the third stage—their maturation in the bone marrow; from the bone marrow they finally pass back into the blood stream, in which they remain until they are destroyed.

This, of course, is pure hypothesis. That is to say, it is not hypothesis to assert that the lymphocyte can develop into an erythrocyte or a granulocyte, for the work of Maximow[5] and others has shown that this is quite definitely the case. What is here hypothetical is the passage of cells from the lymphoid tissue into the blood stream, and their subsequent filtration out of the blood stream into the bone marrow, where they undergo further development. One is accustomed to think of the blood as a carrier of chemical substances from one tissue to another, but one is not so accustomed to look upon it under normal conditions as a carrier of cellular elements from one part of the body to another. Nevertheless, this view would appear to afford some possibility of integrating into one harmonious whole the scattered elements of the haemopoietic system, and for this reason it seems worthy of careful examination. The present note is a brief account of the preliminary results of this investigation.

The tissues examined so far have been the mesenteric lymph nodes, blood, and bone marrow of the cat, dog, and rabbit, the last having been examined in the greatest detail. The mesenteric lymph glands were chosen in the belief that, having first access to the products of digestion conveyed to them via the chyle, they would be the most likely to show developmental processes of the kind mentioned. Whether the results obtained apply with equal force to all other lymph nodes cannot at present be stated.

Examination of the bone marrow, both in smears and in sections, shows that the origin of the erythrocyte can be traced back to a nucleated, non-haemoglobiniferous cell. The granulocyte can be traced back, through the myelocyte, to the premyelocyte—a non-granular cell with a rounded unlobed nucleus. Further back than this the development of erythrocyte and granulocyte cannot be traced in the bone marrow. If now one examines lymphoid tissue, preferably in a smear preparation, one finds all stages in the development of the small lymphocyte into the premyelocyte and the prenormoblast.

It is proposed in a later paper to give a full account of the evidence on which these conclusions are based, and also of some experimental confirmation.

[1] Yoffey, J. M. (1929): *Journ. Anat.*, vol. lxiii, 314-344.
[2] Grünberg, M. (1891): Inaugural Dissertation, Dorpat.
[3] Retterer, Ed. (1899): *C. R. Soc. de Biologie*, tome lii.
[4] Jordan, H. E. (1926): *Amer. Journ. Anat.*, vol. xxxviii, 255-279.
[5] Maximow, A. (1907): *Ziegler's Beitr.*, Bd. xli, S. 122-166. Also Maximow's more recent tissue culture work.

Mr. A. H. Burgess, President of the British Medical Association, stated that the scholarship had been well utilized.

RESEARCH GRANTS.

Dr. C. H. WHITTLE (former Ernest Hart Scholar), who was awarded a special grant of £100, has been continuing investigations at Addenbrooke's Hospital, Cambridge, on the pathology and epidemiology of pneumonia and pneumococcal infections. A previous report of his work has appeared in the *British Medical Journal* of July 28th, 1928 (p. 153), and further reports in the *Journal of Pathology and Bacteriology* and in the *Journal of Hygiene*. It is hoped later in the year to publish in full a paper embodying the results of his more recent investigations.

Dr. ERIC HOLMES (Cambridge) has continued his work in the Pharmacological Laboratory, Cambridge, under Professor W. E. Dixon, on the metabolism of nervous tissue. The grantee reports as follows:

The research concerned the chemical events which accompany the survival and activity of peripheral nerve. Not only is the question of interest for its own sake, but also it is clear that some understanding of these events must precede any satisfactory work on the mode of action of drugs such as anaesthetics, local and general. To obtain sufficient material for chemical estimations mammalian nerves have been used.

Carbohydrate metabolism has been chosen as a subject for investigation, because we have a far more complete knowledge of the metabolism of carbohydrates in other tissues than of the fate of nitrogenous bodies or of fat, and also because there is more prospect of obtaining results which will fit in with those already obtained by the other workers.

So far it has been found that: (*a*) During survival in nitrogen the nerve manufactures lactic acid at the expense of the carbohydrate, which is stored, partly as glycogen, partly as a "free" carbohydrate which is probably glucose, but which may be hexose-phosphate. (*b*) During survival in oxygen there is neither production nor removal of lactic acid—that is, the oxidative removal of lactic acid, which is so fundamental a feature of the carbohydrate cycle in muscle, does not occur in nerve. There is no change in the amount of glycogen; there is, however, a very definite disappearance of the "free" carbohydrate. While there are, so far, no figures available for the resting oxygen consumption of mammalian nerve, calculations based on the observed oxygen consumption of frog nerve (for which the temperature coefficient has also been observed) indicate that the values obtained for carbohydrate disappearance in rabbit nerve are of the order that could be predicted from the oxygen consumption (of frog nerve). (*c*) The results of experiments with stimulated nerve are of so surprising a character that, until they have been repeated and confirmed, I am not prepared to discuss them in any detail. Briefly, they indicate that the glycogen-carbohydrate-lactic acid mechanism, which is under investigation, plays no part in the conduction of the nervous impulse.

The slowness of progress in this work is due partly to the extremely tedious chemical technique, and to the necessity of doing not one, but a series of experiments to establish each point. Another source of delay has been the necessity of observing the electric response of the nerves during the stimulation experiments. The simplest way to do this would, of course, be to use a sensitive galvanometer. Such an instrument is not available here, and, as it would have been extremely expensive to buy, it was decided to use a valve amplifier such as is employed by Adrian. The difficulty has been, however, not to obtain an amplifier of sufficient sensitivity to render audible or visible the electric responses, but to devise a means, not involving the use of expensive photographic recording apparatus, of distinguishing between true electric response and leak of stimulation current. This end has finally been attained, but the amount of time consumed in the process has been great.

Dr. W. S. C. COPEMAN, medical registrar at St. Mary's Hospital, London, received a special grant of £100 to enable him to conduct an inquiry into the effect of irradiation in activating drugs of the fluorescent group, and the

selective action of these drugs on embryonic and neoplastic tissue. Professor G. E. Gask reported to the Committee that, after consulting with Sir Frederick Andrewes, he considered that the work had been carefully carried out, and that there was some, but not overwhelming, evidence to show that drugs of the fluorescent group exercised a little selective action on neoplastic tissue. The following is a summary of the results of the investigation:

From the first series of experimental results it seems justifiable to suggest that sodium fluorescein is, in all but high concentration, non-toxic. It is extremely diffusable by all methods of administration, and appears to stain all tissues equally. It is readily eliminated by means of the urine and faeces in eighteen to twenty-four hours (in mice of 25 grams weight). It would seem that under certain conditions of irradiation—for example, ultra-violet light and sunlight—its toxic properties can be increased temporarily, the increase in the toxicity depending to some extent on the concentration of the salt and the nature of the irradiation. This toxic action of fluorescein does not appear to depend on any permanent or chemical changes occurring in the solution, since there is no evidence that the solution is toxic after the cessation of irradiation. Pereira, working on the combined action of light and eosin on lowly organisms and cells, referred to a suggestion that the process was one of oxidation at the surface of the cells. Sellards further stated that the process could be inhibited by placing the eosin cell mixture in an atmosphere of hydrogen.

In view of the fact that the highest and most immediate mortality was not always amongst the tadpoles and paramecia in the highest concentrations of fluorescein, there may prove to be an optimum concentration for any given type of irradiation.

In the experiments on mice, of which a summary has been given above, the points of chief interest seem to be that fluorescein alone had no effect on the tumour used, while x rays, in the doses given, had no apparent effect in the first generation of mice, possibly owing to the rapid type of tumour used. In the second generation, however, the rate of growth of the tumours treated with a combination of fluorescein and x rays showed a depression, whilst transplants from these tumours did not "take" to a third generation. It was not until this third generation that the effect of the x-ray treatment alone was definitely seen in the present series.

In connexion with the present investigation, a recent paper by Mottram is of interest. He was able to show a summation effect on the growth of rat sarcoma, when it was exposed to the action of radium and fluorescein outside the body prior to inoculation, which was greater than the effect obtained by the use of each separately.

Dr. J. H. HANNAN, working in the Physiological Laboratory, Middlesex Hospital, has been investigating ovarian transplantation. The Committee agreed with its visitor, Professor Gask, that the work had been done well and conducted in a scientific manner, and made a further grant to Dr. Hannan to enable him to continue investigations on the same lines. The grantee submitted the following summary of his work.

The method of simple transplantation—that is, transplantation without anastomosis of blood vessels—was adopted and iso-transplantations (rabbit to rabbit) and hetero-transplantations (cat to rabbit) were undertaken in equal numbers; the whole ovary was utilized. The donor animals were rabbits and cats, and the receiving animals were rabbits. The space between the superficial and deep fasciae of the back was chosen as the site of the transplantation. The receiving animals were oöphorectomized before receiving the transplant, and no antiseptics were applied either to the transplant or to its bed. Forty transplantation experiments were performed; of these, twenty were iso-transplantations (rabbit to rabbit), and twenty were hetero-transplantations (cat to rabbit). The transplants were removed at regular intervals, thus: at two, four, six, etc., up to twelve weeks, and then at four, five, six, etc., months after transplantation. A careful study was made of the anatomical appearances—microscopic and macroscopic—of the transplants, which were compared with control ovaries removed from normal animals. The transplanted ovaries were, in all instances, found to be firmly embedded and well vascularized; the fascial bed was normal in appearance. Histological changes, which may be outlined as follows, occurred in the transplants with regularity:

First Stage (fourteen days transplantations).—Germinal epithelium absent; tunica normal; cell content of stroma of cortex in cat to rabbit transplantations reduced; cell content in rabbit to rabbit transplantations normal; follicles numerous; areas of degeneration visible in the stroma of the cortex; medulla necrosed.

Second Stage (four weeks transplantations).—Tunica thickened; follicles scarce; stroma contained large cavities containing necrotic débris; large numbers of giant cells present.

Third Stage (six weeks transplantations).—Ovarian tissue almost entirely replaced by fibrous tissue containing areas of necrotic material; giant cells reduced in number.

Fourth Stage (eight weeks transplantations).—No trace of ovarian tissue found; transplant consisted of fibrous tissue containing necrotic débris; no giant cells seen.

Fifth Stage (disappearance of the transplants).—This stage occurred with uniformity in the cat to rabbit series at twelve weeks, in the rabbit to rabbit series at five months. The degeneration was found to be fatty in nature.

The occurrence of heat, acceptance of the male, and general activity were observed in the receiving animals and compared with similar phenomena in control animals. These signs of ovarian activity steadily declined as the graft degenerated until complete sexual senility was observable at the period when ovarian tissue could not be found in the transplants. The fate of the transplants consisted in a steady and rapid degeneration combined with a similar decline in the phenomena associated with the action of the ovarian internal secretion. No period was observable in which the ovarian tissue regenerated or even remained stationary in amount. The evidence therefore is against ovarian transplantation being a justifiable procedure.

Professor J. B. GATENBY and Dr. SYLVIA B. WIGODER have been working in the laboratories of Trinity College, Dublin, on the cytology of x-ray sterilization of the testicular cells. Sir William Wheeler reported to the Committee that this research, with which he was thoroughly familiar, was yielding most valuable information. Reports have been published in the *Proceedings of the Royal Society* (vol. 104, 1929). To enable Dr. Wigoder to continue her researches the Science Committee awarded a special grant of £100 for 1929–30.

Dr. R. L. MACKAY (Wolverhampton) has been conducting observations on the blood sugar changes in general anaesthesia; a report of this work has been published in the *British Journal of Anaesthesia*, vol. vi, 1928, page 15.

Drs. MARGARET SALMOND and BEATRICE TURNER (Royal Free Hospital) have studied the Dick test in pregnancy; a summary of their work appeared in the *British Medical Journal* of July 27th, 1929, page 145.

British Medical Association.

CURRENT NOTES.

The Autumn Dinner.

THE eighth Autumn Dinner of the British Medical Association will be held in the Great Hall at the House of the Association in Tavistock Square on the evening of Tuesday, October 15th, at 7 for 7.30 p.m. Many guests of high distinction in the worlds of politics, medicine, and science will be present on this occasion; an opportunity will be taken for the first public inspection of the extensions to the Association's Home, and of the reconstituted Council Chamber, Library, Reading Room, etc. A large attendance of members of the Council is expected, and there will be a limited number of tickets available for other members of the Association and their ladies or other guests. Tickets may be obtained from the Financial Secretary of the British Medical Association, B.M.A. House, Tavistock Square, W.C.1, the price being 15s., exclusive of wines. Early application is desirable.

Katherine Bishop Harman Prize for Encouragement of Research into Disorders Incident to Maternity.

The Council of the British Medical Association is prepared to consider an award of the Katherine Bishop Harman Prize in the year 1930. The value of the prize is £80. Its purpose is the encouragement of study and research directed to the diminution and avoidance of the risks to health and life that are apt to arise in pregnancy and child-bearing. Competitors are left free to select the work they wish to present, provided the work falls within the scope of the prize. Any medical practitioner registered in the British Empire is eligible to compete for the prize. Should the Council of the Association decide that no essay

is of sufficient merit the prize will not be awarded in 1930, but will be offered in the year next following this decision, and in this event the money value of the prize on the occasion in question will be such proportion of the accumulated income as the Council shall determine. The decision of the Council will be final. Each essay must be typewritten or printed in the English language, must be distinguished by a motto, and must be accompanied by a sealed envelope marked with the same motto and enclosing the candidate's name and address. Essays must be forwarded so as to reach the Medical Secretary, British Medical Association House, Tavistock Square, London, W.C.1, not later than December 31st, 1929. Inquiries relative to the prize should also be addressed to the Medical Secretary as above.

Association Notices.

BRANCH AND DIVISION MEETINGS TO BE HELD.

DORSET AND WEST HANTS BRANCH: BOURNEMOUTH DIVISION.—A meeting of the Bournemouth Division will be held at the Town Hall, Bournemouth, on Friday, October 4th, at 8 p.m. Dr. Amrein, medical superintendent of the Altein Sanatorium, Arosa, Switzerland, will give a lecture, illustrated by lantern slides, on the high altitude treatment of pulmonary tuberculosis, including early infraclavicular infiltration and special therapeutic measures, such as thoracoplasty, pneumothorax, and phrenicotomia, based on the lecturer's own experience.

LANCASHIRE AND CHESHIRE BRANCH: SOUTHPORT DIVISION.—Dr. Cronin Lowe has offered to give a brief course of demonstrations in clinical pathology and bacteriology if a sufficient number of members of the Southport Division should desire to participate. A nominal fee of 5s. is to be charged. The demonstrations will be held on Friday afternoons, beginning on September 27th, at 4.30 p.m., in the pathological department of the Infirmary, and each session will last about one hour. It is proposed to admit not more than six or eight members to each session. The proposed subjects are the clinical application of various blood analyses (cytological, biochemical, and serological); the clinical application of efficiency tests (gastric, pancreatic, hepatic, and renal); and clinical bacteriological examinations. Members who wish to enrol for this course should notify the honorary secretary of the Division, Dr. J. Allison Panton, 36, Hoghton Street, Southport, at an early date, in order that groups may be arranged.

METROPOLITAN COUNTIES BRANCH: SOUTH-WEST ESSEX DIVISION.—A meeting of the South-West Essex Division will be held at Queen Mary's Hospital, Stratford, on Tuesday, September 24th, at 3.30 p.m. A series of cases will afterwards be demonstrated by members of the honorary medical staff.

NORTH WALES BRANCH.—A special autumn meeting of the Branch will be held at Colwyn Bay on Friday, October 4th, when a British Medical Association Lecture on radium will be delivered by Mr. H. S. Souttar, surgeon to the London Hospital.

Meetings of Branches and Divisions.

BURMA BRANCH.

A CLINICAL meeting of the Burma Branch was held in the University College clinical theatre, Rangoon, on July 29th; the president, Dr. W. P. MURRAY, took the chair, and fifty-five members and medical guests were present. After the chairman's introductory speech the honorary secretary, Major G. R. MCROBERT, I.M.S., presented to the president and to Dr. N. N. Parakh, M.L.C., the oldest member, the ten new graduates who had had the degrees of M.B., B.S. of Rangoon University conferred on them at a convocation in the afternoon. A very hearty welcome was extended to these gentlemen (five Burmans and five Indians), the first medical graduates of this University.

Lieut.-Colonel H. B. SCOTT, I.M.S., then gave a demonstration of kidney cases, emphasizing the value of cystoscopic examination in cases of genito-urinary disease, even when the diagnosis seemed to be clear without cystoscopy. In one patient with haematuria the presence of a renal calculus was demonstrated by an *x*-ray examination, but a cystoscopic examination showed that the bleeding was due to papilloma of the bladder. In another case of recurring haematuria cystoscopy revealed no sign of bleeding until the loin was massaged by an assistant, when a worm-like blood cast appeared at one of the ureteric openings. At the operation an adenocarcinoma derived from kidney tubules was found. A third patient had unilateral renal tuberculosis, and had been operated on two years before the meeting. Rapid improvement in general condition had followed, and the full day's work was being performed.

Major H. S. CORMACK, I.M.S., demonstrated skiagrams of a case of acutely developed adolescent rickets in a Mohammedan girl.

Major R. V. MORRISON, I.M.S., showed cases of the following conditions: tabes dorsalis, rapidly advancing, and with a comparatively short syphilitic history; pericarditis, with a large effusion and acute valvular lesions, following multiple joint pains, and acute rheumatism; malignant stricture of the oesophagus; and a neurological case for diagnosis. Much discussion ensued over these cases, especially in connexion with the possibility of the last case being a post-encephalitis lethargica manifestation.

Lieut.-Colonel J. TAYLOR, I.M.S., demonstrated *Leptospira icterohaemorrhagiae* in the kidneys of Rangoon rats, and also a very fine specimen of rhino-sporidium seeberi (*Vel. kinealyi*) obtained locally.

A vote of thanks to those who had given demonstrations terminated the proceedings.

Naval and Military Appointments.

ROYAL NAVAL MEDICAL SERVICE.

Surgeon Commanders C. E. Greeson to the *President*, and E. St. G. S. Goodwin to the *Victory*.

Surgeon Lieutenants E. G. Davis, A. L. McDonnell, and S. G. Weldon to be Surgeon Lieutenant Commanders.

Probationary Surgeon Lieutenant S. Jenkinson, R.N.V.R., entered as Surgeon Lieutenant for short service, and appointed to the *Victory* for R.N. Hospital, Haslar, for course of instruction.

ROYAL NAVAL VOLUNTEER RESERVE.

Surgeon Lieutenant A. R. Thomas to the *Victory* for R.N. Hospital, Haslar, for training.

Probationary Surgeon Sublieutenant R. H. Wheeler to the *Pembroke* for R.N. Barracks, Chatham, for training.

ROYAL ARMY MEDICAL CORPS.

Lieutenant (on probation) P. D. Johnson resigns his commission.

Captain R. R. Evans to be Major (prov.).

REGULAR ARMY RESERVE OF OFFICERS.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Colonel H. V. Bagshawe, C.B.E., D.S.O., having attained the age limit of liability to recall, ceases to belong to the Reserve of Officers.

SUPPLEMENTARY RESERVE OF OFFICERS: ROYAL ARMY MEDICAL CORPS.

Lieutenant A. Hemingway to be Captain.

TERRITORIAL ARMY.

ROYAL ARMY MEDICAL CORPS.

J. H. B. Livingston (late Officer Cadet, Glasgow University Contingent, Senior Division, O.T.C.) to be Lieutenant with seniority February 1st.

COLONIAL MEDICAL SERVICES.

The following appointments are announced: R. E. Anderson, Medical Officer, Federated Malay States; Miss N. N. Lowther, Lady Medical Officer, Federated Malay States; L. E. Vine, Medical Officer, Federated Malay States; F. W. W. Fox, Medical Officer, Nigeria; F. Williams, Pathologist, Nigeria; R. T. B. Green, Malaria Research Officer I, Institute for Medical Research, Federated Malay States; R. Lewthwaite, Pathologist II, Institute for Medical Research, Federated Malay States; R. E. Barratt and R. S. F. Hennessey, Medical Officers and Health Officers, Madi and Mbale, Uganda, respectively; J. McDaniel and J. J. Mitchell, District Medical Officers and Health Officers, Hoima and Masaka, Uganda, respectively; S. W. T. Lee, Senior Medical Officer and Health Officer, Jinja, Uganda.

J. W. Thomson promoted Assistant Director of Medical Services, Nigeria.

W. A. A. Malone has resigned his appointment as Medical Officer, W.A.M.S. (Sierra Leone).

VACANCIES.

AYLESBURY: ROYAL BUCKINGHAMSHIRE HOSPITAL.—Resident Medical Officer (male). Salary £180 per annum.

BANGOUR MENTAL HOSPITAL, West Lothian.—Second Assistant Medical Officer (male, unmarried). Salary £350, rising to £400, per annum.

BARROW-IN-FURNESS COUNTY BOROUGH.—Assistant Medical Officer of Health and Assistant Tuberculosis Officer. Salary £600 per annum.

BATH: ROYAL UNITED HOSPITAL.—House-Surgeon. Salary £150 per annum.

BEDFORD COUNTY HOSPITAL.—Assistant House-Surgeon (male). Salary £130.

BIRKENHEAD GENERAL HOSPITAL.—Casualty Surgeon (male). Salary £100 per annum.

BIRMINGHAM GENERAL DISPENSARY: NECHELL'S BRANCH.—Resident Medical Officer (male). Salary £450 per annum.

BIRMINGHAM GENERAL HOSPITAL.—(1) Two Resident Anaesthetists; salary £120 per annum. (2) Three House-Surgeons; salary £70 per annum.

BIRMINGHAM UNION: SELLY OAK HOSPITAL.—Resident Physician (male). Salary £400 to £600.

BLACKBURN AND EAST LANCASHIRE ROYAL INFIRMARY.—Fourth House-Surgeon (male). Salary £130 per annum.

BOURNEMOUTH: ROYAL VICTORIA AND WEST HANTS HOSPITAL.—House-Surgeon (male). Salary £120 per annum.

BRADFORD: ROYAL EYE AND EAR HOSPITAL.—Junior House-Surgeon (male). Salary £120.

BRIGHTON AND HOVE PROVIDENT DENTAL HOSPITAL.—Honorary Anaesthetist.

BRIGHTON: ROYAL SUSSEX COUNTY HOSPITAL.—House-Physician (male). Salary £150 per annum.

BRISTOL CITY AND COUNTY MENTAL HOSPITAL.—Second and Third Assistant Medical Officers (male). Salary £500, rising to £550, and £350, rising to £450, respectively.

CAMBRIDGE: ADDENBROOKE'S HOSPITAL.—House-Surgeon. Salary at the rate of £130 per annum.

CAPETOWN UNIVERSITY.—Assistant Anatomist. Salary £750 per annum.

CHESTER ROYAL INFIRMARY.—House-Surgeon (male). Salary £120 per annum.

CITY OF LONDON HOSPITAL FOR DISEASES OF THE HEART AND LUNGS, Victoria Park, E.2.—House-Physician (male). Salary at the rate of £100 per annum.

COVENTRY CITY.—Medical Officer of Health. Salary £1,225, rising to £1,500.

DUMFRIES AND GALLOWAY ROYAL INFIRMARY.—Junior Resident Medical Officer (male). Salary £100 per annum.

EVELINA HOSPITAL FOR CHILDREN, Southwark, S.E.1.—House-Surgeon (male) from October 1st to April 12th. Salary at the rate of £120 per annum.

FEDERATED MALAY STATES: CENTRAL HEALTH BOARD.—Three Medical Officers. Salary at the rate of $700, rising to $800, per mensem, equivalent to £980, rising to £1,120, a year.

GLAMORGAN COUNTY COUNCIL.—Medical Officer (male). Salary £632 10s., rising to £760, per annum.

GLOUCESTERSHIRE ROYAL INFIRMARY AND EYE INSTITUTION, Gloucester.—(1) Honorary Ear, Nose, and Throat Surgeon. (2) First House-Surgeon (male); salary £135 per annum.

GODALMING, SURREY: KING GEORGE V SANATORIUM.—Junior Assistant Medical Officer (male). Salary £500 per annum.

GREAT YARMOUTH: GENERAL HOSPITAL.—Senior House-Surgeon (male, unmarried). Salary £150 per annum.

GRIMSBY COUNTY BOROUGH AND PORT.—Part-time Clinical Tuberculosis Officer and Assistant Medical Officer of Health (male). Salary £750 per annum.

HAMPSTEAD: PARISH OF ST. JOHN.—Junior Resident Assistant Medical Officer at New End Hospital. Salary £200 per annum.

HOSPITAL OF ST. JOHN AND ST. ELIZABETH, 60, Grove End Road, N.W.8.—Resident House-Surgeon (male). Salary at the rate of £75 per annum.

HOSPITAL FOR SICK CHILDREN, Great Ormond Street, W.C.1.—(1) Assistant Pathologist and Research Fellow. (2) House-Surgeon. (3) House-Physician. Salary for (1) £450, and (2) and (3) at the rate of £100 per annum.

HULL ROYAL INFIRMARY.—Assistant House-Physician (male). Salary at the rate of £130 per annum.

LEWISHAM BOROUGH.—Assistant Medical Officer of Health and Maternity and Child Welfare Medical Officer. Salary at the rate of £650, rising to £750 per annum.

LIVERPOOL: DAVID LEWIS NORTHERN HOSPITAL.—(1) House-Surgeon. (2) House-Physician. Salary at the rate of £100 per annum each.

LIVERPOOL: ROYAL SOUTHERN HOSPITAL.—Medical Tutor and Registrar.

LIVERPOOL STANLEY HOSPITAL.—House-Surgeon (male). Salary at the rate of £100 per annum.

LONDON COUNTY COUNCIL: MENTAL HOSPITALS SERVICE.—Eighth Assistant Medical Officer. Salary £300, rising to £400, a year, with fluctuating temporary additions.

LONDON JEWISH HOSPITAL, Stepney Green, E.1.—(1) Honorary Assistant Surgeon in the Gynaecological Department. (2) Honorary Assistant Radiologist. (3) Honorary Medical Officer in Charge of the Actinotherapeutic Department.

LONDON LOCK HOSPITAL, 91, Dean Street, W.1.—House-Surgeon. Salary at the rate of £200 per annum.

LONDON TEMPERANCE HOSPITAL, Hampstead Road, N.W.1.—Resident Medical Officer. Salary £175 per annum.

LOUGHBOROUGH AND DISTRICT GENERAL HOSPITAL AND DISPENSARY.—Resident House-Surgeon (female, unmarried). Salary £125.

MANCHESTER BABIES' HOSPITAL, Burnage Lane, Levenshulme.—Junior Resident Medical Officer. Salary at the rate of £50 per annum.

MANCHESTER UNION.—Assistant Medical Officer (male). Salary at the rate of £275 per annum.

MARGATE: ROYAL SEA BATHING HOSPITAL FOR SURGICAL TUBERCULOSIS.—House-Surgeon. Salary at the rate of £100 per annum.

MERTHYR GENERAL HOSPITAL, Merthyr Tydfil.—Resident Medical Officer. Salary at the rate of £150 per annum.

NEWCASTLE-UPON-TYNE CITY MENTAL HOSPITAL, Gosforth.—Junior Assistant Medical Officer (male). Salary £250, rising to £400.

NEWPORT, MON.: ROYAL GWENT HOSPITAL.—Junior Resident Medical Officer. Salary at the rate of £125 per annum.

NORFOLK AND NORWICH HOSPITAL, Norwich.—House-Surgeon. Salary £120.

NORTHAMPTONSHIRE COUNTY COUNCIL.—Medical Officer of Health and School Medical Officer. Salary at the rate of £1,100 per annum.

NORTH MIDDLESEX HOSPITAL, Silver Street, Edmonton, N.18.—Resident Medical Officer (male). Salary £200 per annum.

NOTTINGHAM CHILDREN'S HOSPITAL.—Resident House-Physician (woman). Salary at the rate of £150 per annum.

POOLE: CORNELIA AND EAST DORSET HOSPITAL.—House-Surgeon (male). Salary £150 per annum.

PRINCE OF WALES'S GENERAL HOSPITAL, Tottenham, N.15.—(1) Senior House-Physician. (2) Senior House-Surgeon. (3) Special House-Surgeon. (4) Junior House-Physician. (5) and (6) Two Junior House-Surgeons. Salaries of (1), (2), and (3) at the rate of £120 per annum; (4), (5), and (6) at the rate of £90 per annum.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney Road, E.2.—(1) Casualty Officer. (2) House-Physician. Salary £100 a year each.

ROYAL FREE HOSPITAL, Gray's Inn Road, W.C.1.—Senior Resident Medical Officer (male). Salary £150 per annum.

ST. MARY ISLINGTON INFIRMARY, Highgate Hill, N.19.—Assistant Medical Officer (male). Salary at the rate of £350 per annum.

SALFORD ROYAL HOSPITAL.—(1) House-Surgeon. (2) House-Surgeon attached to the Orthopaedic Department. (3) Casualty House-Surgeon. (Males.) Salary at the rate of £125 per annum each.

SEAMEN'S HOSPITAL SOCIETY, Greenwich, S.E.—Surgeon with charge of in-patients at the Albert Dock Hospital, Connaught Road, E.

STAFFORD: COUNTY MENTAL HOSPITAL.—Second Assistant Medical Officer (male, single). Salary £630, rising to £760.

SOUTHAMPTON: ROYAL SOUTH HANTS AND SOUTHAMPTON HOSPITAL.—Casualty Officer. Salary £120.

SUDAN MEDICAL DEPARTMENT.—Medical Officer. Pay £E.720, rising to £E.1,200, a year.

SUNDERLAND: CHILDREN'S HOSPITAL.—Two Resident Medical Officers (female). Salary £100 per annum.

SYDNEY UNIVERSITY.—Bosch Chairs of Surgery, Medicine, and Bacteriology. Salaries £2,500, £2,500, and £1,100 per annum respectively.

WEST MIDDLESEX HOSPITAL, Isleworth.—Resident Assistant Medical Superintendent. Salary £450, rising to £600 per annum.

This list of vacancies is compiled from our advertisement columns, where full particulars will be found. To ensure notice in this column advertisements must be received not later than the first post on Tuesday morning.

British Medical Association.

OFFICES, BRITISH MEDICAL ASSOCIATION HOUSE, TAVISTOCK SQUARE, W.C.1.

Departments.

SUBSCRIPTIONS AND ADVERTISEMENTS (Financial Secretary and Business Manager. Telegrams: Articulate Westcent, London).

MEDICAL SECRETARY (Telegrams: Mediscera Westcent, London).

EDITOR, *British Medical Journal* (Telegrams: Aitiology Westcent, London).

Telephone numbers of British Medical Association and British Medical Journal, Museum 9851, 9852, 9853, and 9864 (internal exchange, four lines).

SCOTTISH MEDICAL SECRETARY: 7, Drumsheugh Gardens, Edinburgh. (Telegrams: Associate, Edinburgh. Tel.: 24361 Edinburgh.)

IRISH MEDICAL SECRETARY: 16, South Frederick Street, Dublin. (Telegrams: Bacillus, Dublin. Tel.: 4737 Dublin.)

Diary of the Association.

SEPTEMBER.

20 Fri. London: Ophthalmic Committee, 2.30 p.m.

24 Tues. London: Organization Committee, 2 p.m.
South-West Essex Division: Queen Mary's Hospital, Stratford, 3.30 p.m. Cases.

25 Wed. London: Medico-Political Committee, 2.30 p.m.

26 Thurs. London: Journal Committee, 2.30 p.m.

27 Fri. London: Public Health Committee, 2.30 p.m.

OCTOBER.

2 Wed. London: Finance Committee, 2.30 p.m.

4 Fri. Bournemouth Division: Town Hall, Bournemouth, 8 p.m. Dr. Amrein on the High Altitude Treatment of Pulmonary Tuberculosis.
North Wales Branch: Colwyn Bay. B.M.A. Lecture by Mr. H. S. Souttar on Radium.

9 Wed. South Middlesex Division: St. John's Hospital, Twickenham, 3.30 p.m. Dr. T. A. Ross on Diagnosis and Treatment of Functional Nervous Disorder in General Practice.

16 Wed. London: **Council**, 10 a.m.

30 Wed. London: "Decisions of Association" Subcommittee, 2 p.m.

APPOINTMENTS.

REFFELL, G. C. E., M.B., B.S.Durh., D.P.H.Lond., Health Officer to the Government of Liberia, Port Health Officer to the Port of Monrovia, and Superintendent of the National Baptist Hospital, Monrovia.

WILSON, H. F., M.B., B.Ch.Camb., Certifying Factory Surgeon for the Carnoustie District, Angus.

WESTMINSTER HOSPITAL.—*Senior Resident and Casualty Officer:* A. W. Kendall, M.B., B.S.Lond., L.R.C.P., M.R.C.S. *Resident House-Physician:* A. E. Hutton, L.R.C.P., M.R.C.S. *Resident House-Surgeon:* C. E. Caudwell, L.R.C.P., M.R.C.S. *Resident Obstetric Assistant:* C. P. K. Toland, L.R.C.P., M.R.C.S. *House-Physician to the Children's Department:* J. Morgan, M.B., B.S.Lond.

POST-GRADUATE COURSES AND LECTURES.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole Street, W.1.—*Westminster Hospital*, S.W.1: Mon. to Sat., Special Course in Medicine, Surgery, and the Specialties, 10.30 a.m. to 5.30 p.m. daily; fee £2 2s. *Bethlem Royal Hospital*, S.E.1: Course in Psychological Medicine, Tues. and Sat. mornings at 11; fee 10s. 6d. Copies of all syllabuses obtainable from the Fellowship.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.15.—Mon., 2.30 to 5 p.m., Medical, Surgical, and Gynaecological Clinics; Operations. Tues., 2.30 to 5 p.m., Medical, Surgical, Throat, Nose, and Ear Clinics; Operations. Wed., 2.30 to 5 p.m., Medical, Skin, and Eye Clinics; Operations. Thurs., 11.30 a.m., Dental Clinics; 2.30 to 5 p.m., Medical, Surgical, and Ear, Nose, and Throat Clinics; Operations. Fri., 10.30 a.m., Throat, Nose, and Ear Clinics; 2.30 to 5 p.m., Surgical, Medical, and Children's Diseases Clinics; Operations.

LIVERPOOL UNIVERSITY CLINICAL SCHOOL ANTE-NATAL CLINICS.—Royal Infirmary: Mon. and Thurs., 10.30 a.m. Maternity Hospital: Mon., Tues., Wed., Thurs., and Fri., 11.30 a.m.

MANCHESTER ROYAL INFIRMARY.—Tues., 4.15 p.m., Some Points relating to the Etiology and Treatment of Appendicitis. Fri., 4.15 p.m., The Treatment and Development of the Premature and Immature Infant.

BIRTHS, MARRIAGES, AND DEATHS.

The charge for inserting announcement of Births, Marriages, and Deaths is 9s., which sum should be forwarded with the notice not later than the first post on Tuesday morning, in order to ensure insertion in the current issue.

BIRTHS.

ARCHER.—On September 11th, at York Place Nursing Home, to Frances, wife of Dr. G. E. Archer of Victoria Park, Manchester, the gift of a son.

ELMSLIE.—On September 5th, at 69, Fountainhall Road, Aberdeen, to Dr. and Mrs. John G. Elmslie, a daughter.

MARRIAGE.

DAVIS-COETMORE-JONES.—On July 24th, at All Saints' Church, Child's Hill, London, N.W., Arthur Hubert Treby Davis, Major R.A.M.C., eldest son of Mr. and Mrs. A. J. Davis, Little Welbourne, Pagham, Sussex, to Kathleen Peers, younger daughter of the late Stanley Coetmore-Jones, R.E., of Skegness, Lincs., and Mrs. Coetmore-Jones of 158, Mill Lane, Hampstead, N.W.6.

DEATH.

BALNAVES.—On September 11th, 1929, at a nursing home, Aberdeen, Joseph Wood Balnaves, M.B., Ch.B., of Tarporley, Cheshire, aged 32 years.

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